

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3585

LOUISVILLE AND NASHVILLE RAILROAD COMPANY

IN RE ACCIDENT

NEAR RADNOR, TENN., ON

JULY 3, 1954

SUMMARY

Date: July 3, 1954
Railroad: Louisville and Nashville
Location: Radnor, Tenn.
Kind of accident: Derailment
Train involved: Passenger
Train number: 98
Engine number: Diesel-electric units 770 and 796
Consist: 11 cars
Estimated speed: 45 m. p. h.
Operation: Signal indications
Tracks: Double; 2°30' curve; 0.31 percent descending grade northward
Weather: Clear
Time: 12:52 p. m.
Casualties: 1 killed; 31 injured
Cause: Undetermined

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3585

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

LOUISVILLE AND NASHVILLE RAILROAD COMPANY

September 9, 1954

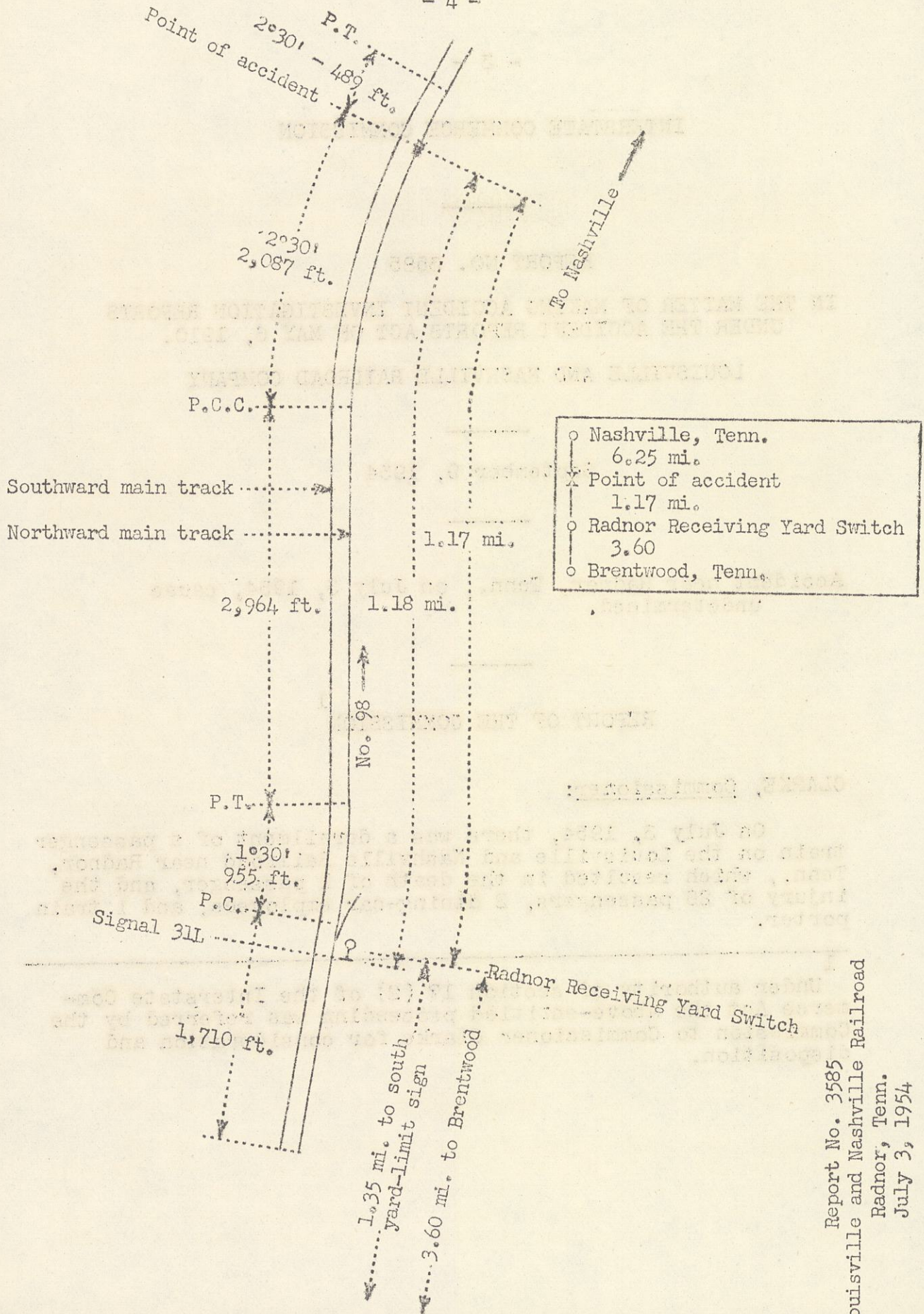
Accident near Radnor, Tenn., on July 3, 1954, cause
undetermined.

REPORT OF THE COMMISSION¹

CLARKE, Commissioner:

On July 3, 1954, there was a derailment of a passenger train on the Louisville and Nashville Railroad near Radnor, Tenn., which resulted in the death of 1 passenger, and the injury of 28 passengers, 2 dining-car employees, and 1 train porter.

¹ Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.



Report No. 3585
Louisville and Nashville Railroad
Radnor, Tenn.
July 3, 1954

Location of Accident and Method of Operation

This accident occurred on that part of the Birmingham Division extending between Brentwood and Nashville, Tenn., 11.02 miles. In the vicinity of the point of accident this is a double-track line, over which trains moving with the current of traffic are operated by signal indications. North-bound freight traffic en route to Radnor receiving yard diverges eastward from the main track at a switch located 3.60 miles north of Brentwood and 1.35 miles north of the south yard-limit sign. The accident occurred on the northward main track at a point 1.17 miles north of the receiving yard switch. From the south there are, in succession, a tangent 1,710 feet in length, a $1^{\circ}30'$ curve to the left 955 feet, a tangent 2,964 feet, and a compound curve to the right, having a maximum curvature of $2^{\circ}30'$, 2,087 feet to the point of accident and 489 feet northward. The grade for north-bound trains varies between 0.40 percent and 0.31 percent descending throughout a considerable distance immediately south of the point of accident, and it is 0.31 percent descending at that point. In the vicinity of the point of accident the main tracks are laid on a fill which is about 26 feet in height at the point of derailment and more than 1 mile in length. At the base of this fill tracks of Radnor yard parallel the main tracks on the east.

On the curve on which the accident occurred the track structure consists of 132-pound rail, 39 feet in length, laid new in April, 1950, on an average of 21 treated ties to the rail length. It is fully tieplated with double-shoulder tieplates, spiked with two rail-holding spikes and two plate-holding spikes per tieplate, and is provided with 6-hole 36-inch joint bars and an average of 9 rail anchors per rail. It is ballasted with crushed slag to a depth of 2 feet below the bottoms of the ties. At the point of accident the specified curvature was $2^{\circ}30'$ and the specified super-elevation was 3 inches.

Semi-automatic signal 31L, governing north-bound movements on the northward main track, is located 1.18 miles south of the point of accident.

The maximum authorized speed for passenger trains in the vicinity of the point of accident is 50 miles per hour.

Description of Accident

No. 98, a north-bound first-class passenger train, consisted of Diesel-electric units 770 and 796, coupled in multiple-unit control, three baggage cars, five coaches, one dining car, and two sleeping cars, in the order named. The first car was of steel underframe construction, the tenth car was of lightweight steel construction, and the other cars were of conventional all-steel construction. This train departed from Birmingham, Ala., 195.63 miles south of the point of accident, at 8:40 a. m., 25 minutes late, and entered the northward main track at Brentwood, 4.77 miles south of the point of accident, at 12:42 p. m., 24 minutes late. It passed signal 3LL which indicated Proceed, and while moving at an estimated speed of 45 miles per hour the front truck of the third car, the fourth to the ninth cars, inclusive, and the front truck of the tenth car were derailed.

A separation occurred between the third and fourth cars. The locomotive and the first three cars stopped with the front end of the locomotive about 2,090 feet north of the point of accident and the rear end of the third car approximately 1,180 feet north of the front end of the fourth car. The front truck of the third car was derailed to the east. The front wheels of the front truck of the fourth car were derailed to the west, the second pair of wheels remained on the rails, and the rear wheels of this truck were derailed to the east. The rear truck of this car was derailed to the west. The other derailed cars were derailed to the west and stopped approximately in line with the track. The fourth and the tenth cars stopped upright, and the other derailed cars leaned toward the west at angles of from 10 to 75 degrees. The sixth car was badly damaged; the fifth, seventh, and eighth cars were somewhat damaged; and the third, fourth, ninth, and tenth cars were slightly damaged.

The weather was clear at the time of the accident, which occurred at 12:52 p. m. The temperature as recorded at the United States Weather Bureau station at Berry Field, located approximately 8 miles southeast of Nashville, was 95 degrees at 12:30 p. m. on the day the accident occurred.

Discussion

As No. 98 was approaching the point where the accident occurred the speed was about 45 miles per hour, in territory where the maximum authorized speed is 50 miles per hour. The enginemen were maintaining a lookout ahead from their respective positions in the control compartment at the front

of the locomotive. The members of the train crew were in various locations in the cars of the train. The engineer made a service application of the brakes as the train was moving on the curve on which the accident occurred, and several seconds later the brakes became applied in emergency as a result of the derailment. The enginemen said that the locomotive was riding smoothly and there was no indication of defective track. They were unaware of anything being wrong until the brake-pipe pressure became depleted. The train baggageman, who was in the third car, said that he felt the car jerk and that he then became aware that one of the trucks was derailed. Prior to this time he had noticed no indication of defective track or equipment. He said that immediately after the truck became derailed the rear end of the car swerved toward the west and then returned to normal position. After this occurred the brakes became applied in emergency, and a separation then occurred between the third and fourth cars. The baggageman's statement that the train parted behind the third car after the emergency application of the brakes occurred indicates that the emergency application was caused by some disturbance of the air-brake system at some other point in the train during the progress of the derailment.

The track in the vicinity of the point of accident was last ballasted in April 1950. Since that time a new underpass has been constructed at Farrell Road, 758 feet south of the point of accident. The fill was cut back about 150 feet on each side of the roadway and during the time this construction was in progress traffic was diverted over two temporary trestles. After completion of the underpass in February 1953, the tracks were restored to normal alignment for the distance of approximately 400 feet involved. Since that time such work as has been done on the track in this vicinity was described as smoothing operations and the pulling of low spots due to the settling of the new fill on both sides of the underpass. This necessitated the use of ballast available in the track area and resulted in generally lowering the ballast level. At some places between the ties and at the ends of the ties in this vicinity the ballast was down near the bottoms of the ties.

The division engineer arrived at the scene of derailment about 25 minutes after the accident occurred. He said that throughout a distance of approximately 80 feet south of the first wheel marks on the ties every third tie bore indications of having been struck by some object at points about 1 foot east of the west rail. At a point 36 feet south of the first wheel marks on the ties a tie had been struck

inside the east rail. North of this point the west rail was canted outward and the gage side of the web bore scraping marks. At a joint in the west rail 18 feet south of the first wheel marks on the ties the inside spikes were pulled upward about 1 inch and the corner of the inside joint bar was heavily battered. Except for the canting of the rail, the track structure south of this joint was not disturbed. The west rail north of this joint was overturned to the west and bore flange marks on the gage side of the web. At a point 3 feet 11 inches north of this joint there was a dent near the gage side of the head of the east rail, and at a point 14 feet farther northward the ties bore marks indicating that wheels had become derailed to the east. These marks extended to the point at which the third car stopped and indicated that the wheels of the front truck of this car were the first wheels to become derailed. The division engineer said that throughout a distance of approximately 50 feet north of the initial point of derailment the east rail remained in line and he observed no indications of the track having shifted. He also said that although the ballast level was low in the vicinity of the underpass at Farrell Road this condition did not exist at the point of derailment. He said that throughout a distance of about 250 feet immediately south of the point of derailment the cribs were at least half full of ballast, and that at the initial point of derailment and north of that point the cribs had full ballast section. It was his opinion that some object fell from the train to the track structure and was struck by a wheel.

The section foreman last inspected the track in this vicinity the day before the accident occurred. No. 8, a north-bound first-class passenger train, passed Brentwood at 5:43 a. m., on time, and passed the point at which the accident occurred approximately 7 hours before the time of the accident. The engineer and the conductor of this train said that there was no indication of defective condition of the track.

As the derailed equipment was rerailed the damaged track was repaired, and on the day after the accident three cars of ballast were unloaded on each main track in the 400-foot area covered by the derailment, and several additional cars of ballast were unloaded south of the scene of the accident.

From the investigation of this accident it is apparent that the derailment was caused by some condition which developed under the train involved. The enginemen observed

no abnormal condition of the track as they approached the scene of the accident, and the locomotive and first two cars passed over the point of derailment without incident. Apparently the leading truck of the third car was the first to be derailed, and this occurred before the emergency application of the brakes.

Various possible causes of the derailment were explored. The marks on the track structure, as described by the division engineer, indicated that there may have been dragging equipment on No. 98 or an obstruction on the track. Examination of the derailed cars after the accident failed to disclose any condition of car equipment which could have caused or contributed to the cause of the derailment. The knuckle at the front end of the fourth car was broken. The carrier irons at the rear end of the third car and at the front end of the fourth car were bent. The fracture of the knuckle was a new break. This fracture together with the distortion of the carrier irons apparently resulted from a twisting action of the couplers during the derailment. Some of the derailed cars were considerably damaged, and if any defect in car equipment existed prior to the accident the evidence of such condition was destroyed as a result of the accident. When the front portion of the train stopped it was found that the air hose between the second and third cars were separated, but no indications were found that the hose had been struck. The enginemen did not see any obstruction on the track, and during the investigation no evidence was developed that there had been an obstruction on the track.

The conditions which existed at the time of the accident suggested the possibility that the track may have kinked or buckled under the train. During the 25-day period immediately preceding the day of the accident the weather had been hot daytimes and cool at night; on each of these days the temperature had reached a maximum of more than 90 degrees, and it was about 95 degrees at the time the accident occurred. A number of witnesses expressed the view that these temperature changes, together with the condition of the track ballast in this vicinity and the application of the brakes on the curve immediately prior to the accident, might have caused the track to buckle under the train. However, no evidence was developed of ties having shifted in the ballast.

Cause

The cause of this accident was not determined.

Dated at Washington, D. C., this ninth
day of September, 1954.

By the Commission, Commissioner Clarke.

(SEAL)

GEORGE W. LAIRD,
Secretary.